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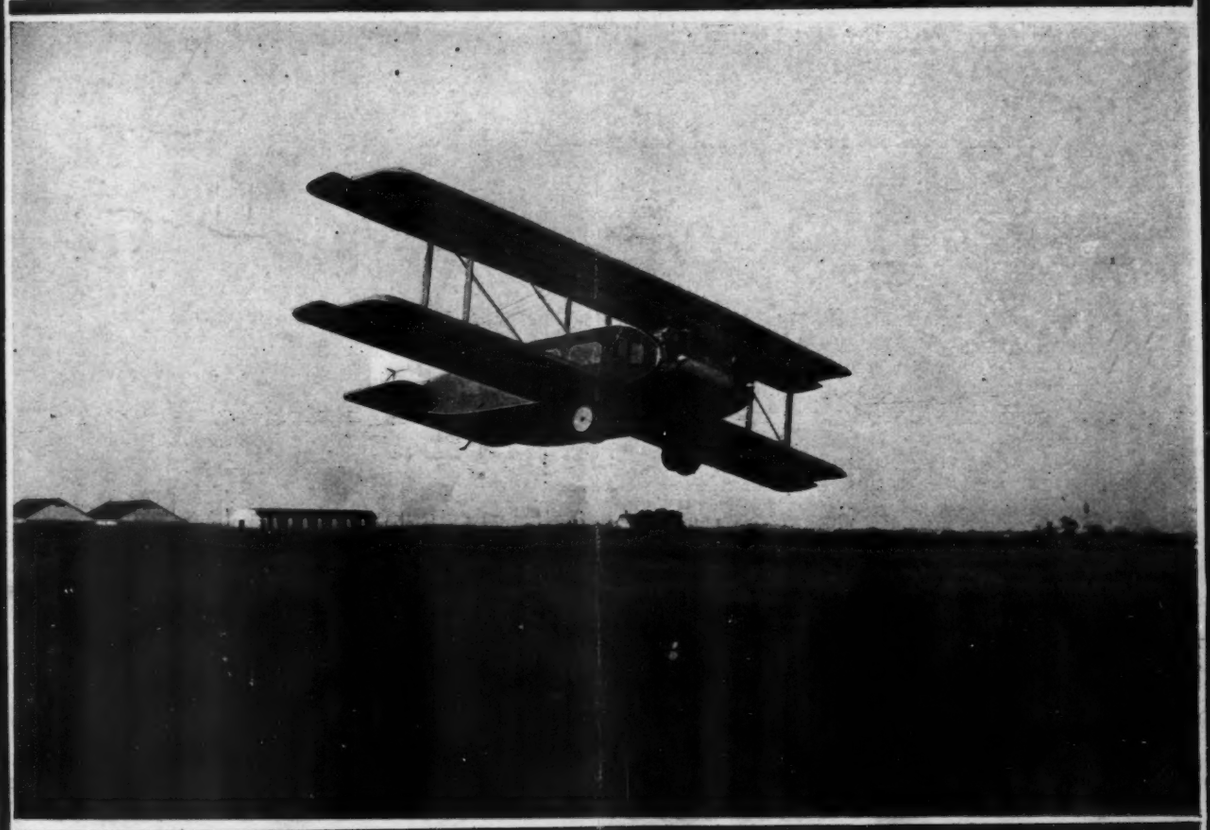

The Remington-Burnelli Airliner Coming in to Land

VOLUME XI
Number 14

Four Dollars a Year

SPECIAL FEATURES

AEROMARINE PIONEERING
BOMBING TESTS OF U.S.S. ALABAMA
MAJ. GEN. M. M. PATRICK, CHIEF OF AIR SERVICE
AMERICAN LEGION FLYING MEET
THE ZEPPELIN-STAAKEN 1,000 HP. MONOPLANE

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HIGHLAND, N. Y.
225 FOURTH AVENUE, NEW YORK

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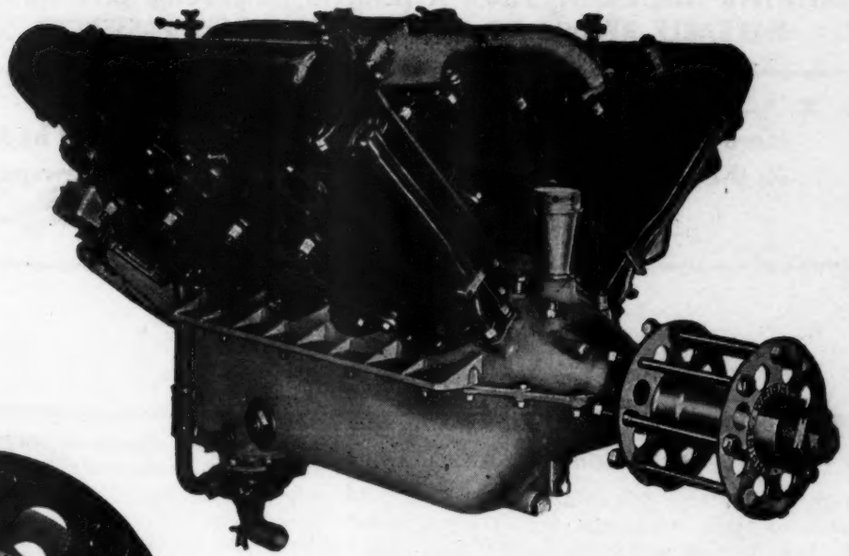

The identification of Incomparable Service

FROM now on all WRIGHT engines will have this nameplate on the hub. This is a visible guarantee to all who fly with the engine that it was made by us in our own plant. This plate certifies that every ounce of material was critically examined, then machined by our own experienced men to exact gauge and carefully assembled. The nameplate guarantees the engine has passed our exacting running test requirements. While we are building aircraft engines this vigilance will never be relaxed.

The seven absolute requirements for aircraft engines are fulfilled in the two models of Wright engines now in production and being sold.

ENGINE REQUIREMENTS	RESULT IN PLANE OPERATION
1. *Lightness per horsepower*	Greater useful load, increased performance.
2. *High power*	Speed, climb, power reserve.
3. *Low fuel consumption*	Economy, long travel radius, increased useful load.
4. *Short overall length*	Increased manoeuvreability, compact installation.
5. *Interchangeable parts*	No long repair periods, economy, safety.
6. *Longevity*	Many WRIGHT engines built four years ago are still flying. Many have flown 1,000 hours and over. With th E-2 and H-2 engines incorporating changes based on actual experience from hundreds of our own engines, we advise commercial flyers to figure on ultimate life of 2,000 hours.
7. *Reliability*	The reliable WRIGHT engines safeguard the life of the flyers thru exacting quality and test requirements. Skill, experience and unrelaxing vigilance make these engines the most reliable in the world.

Compare the characteristics of these stock engines now in production with any engine built—foreign or domestic.

	WRIGHT E-2	WRIGHT H-2
Power at 2000 R.P.M.	220 H.P.	358 H.P.
" " 1800 "	200 H.P.	326 H.P.
Weight, dry with hub	485 lbs.	620 lbs.
Gas per H.P. hour	.48 lbs.	.5 lbs.
Overall length, including hub and mag.	4'-1⅜"	4'-3²⁵⁄₃₂"

NOTE:—The power given is the mean rated power, many individual engines give higher power and lower consumption.

MINIMIZING REPAIRS

The new models of WRIGHT engines have thicker cylinder sleeve heads and increased cooling around the valves. This has stopped valve warping. From 200 to 300 hours may be expected without regrinding valves. A new device makes engine timing an easy operation.

Member Manufacturers Aircraft Association

WRIGHT AERONAUTICAL CORPORATION
PATERSON, N. J.

WRIGHT
AERONAUTICAL ENGINES
STANDARD MOTIVE POWER FOR ALL AIRCRAFT

AN AUTHORITATIVE STATEMENT FROM A LEADING NEW YORK CITY NEWSPAPER ON THE REMARKABLE RECORD OF AEROMARINE AIRWAYS PASSENGER SERVICE

Here is what the Editor of the New York Evening Mail had to say on the subject in a leading editorial printed in that newspaper on Friday, August 26, 1921.

THE EVENING MAIL AUGUST 26 19

Fine Flying Over Fulton's Wake.

New York was the first port in America, if not in the world, to make commercial use of steam navigation. It is the first port in the country, also, to maintain successful regular seaplane transportation over its harbor upon a considerable scale.

Public comment should extend congratulation to the Aeromarine Airways, operating from the foot of West Eighty-second street, for the fine standard of schedule and safety it has maintained during its three months of passenger service this summer.

The official report of the Airways to the Bureau of Aeronautics of the Navy department shows that 2,007 passengers have been taken aloft by four flying boats, in total flights of 28,171 miles, with but one mishap and that of no serious nature. One of the boats had to make a forced landing during a storm. There were six persons in the craft at the time and none suffered so much as a scratch.

We may doubt if any truthful report of land carriage for this number of miles, trips and passengers could disclose as high a record of freedom from "troubles of the road," unless the conveyance were upon rails. Certainly no highway vehicle operated at seventy miles per hour would perform as faithfully as these flying boats have done. The accomplishment must have been won by a most praiseworthy carefulness both of mechanicians and pilots.

The Aeromarine Airways service has made a splendid demonstration in the direction of permanent, safe and economical air-flight commercial transportation over waters which but little more than a century ago were agitated under the paddle-wheels of Fulton's historic, clanking Clermont.

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widows as the Meyer committee

Tammany does not want to
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Civil War in

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Aeromarine Flying Boats

in the hands of operating companies are demonstrating daily the *safety* and *profit* of flying boat transportation.

The Aeromarine Navy H-S-2-L flying boats at their present low prices and with their low operating cost of about **$16.00** per flying hour (covering fuel, pilot and mechanic) and their carrying capacity of six, allowing a possible revenue of from $250 to $300 per flying hour are the best aviation buy in America to-day.

We are taking orders now for spring delivery.

Write for catalog and dealers proposition

AEROMARINE ENGINEERING & SALES CO.

TIMES BUILDING **NEW YORK**

"BE SURE IT'S AN AEROMARINE"

AVIATION AND AIRCRAFT JOURNAL

OCTOBER 3, 1921 VOL. XI. NO. 14

Member of the Audit Bureau of Circulations

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Thomas-Morse Training 2-Seater in flight over Ithaca, N. Y.

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AVIATION AND AIRCRAFT JOURNAL

LADISLAS D'ORCY, EDITOR
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Vol. XI — October 3, 1921 — No. 14

The New Air Service Chief

THE early appointment of Col. Mason M. Patrick to the post of Chief of Air Service in the place of Maj. Gen. Charles T. Menoher indicates that the War Department had little difficulty in selecting an officer for this detail. Colonel Patrick's record as head of the Air Service, A.E.F., as well as his recognized ability as an engineer officer, made him the obvious choice lest a flying officer be selected.

Great regret was expressed everywhere that General Mitchell did not receive the promotion, but it is also realized that a detail which confers the advanced rank of Major General would cause much hard feeling if given to an officer as young as General Mitchell when men of much longer service were available.

The general feeling over the new appointment is that the new Chief of Air Service will not tolerate any actions on the part of officers which are not in harmony with the policy of the War Department.

While it has been thought that the main difficulty in the Air Service was caused by General Mitchell's outspoken claims for aircraft, this phase seems to have recently been subordinated by various difficulties relating to contracts. When the Secretary of War has to put comparatively small orders before the Cabinet for a decision as to policy, it is a reflection on the service which creates a situation so involved as to require prompt solution. It is felt that the new Chief will so guide the service that such matters will henceforth follow the routine observed in other branches of the Army rather than become special cases requiring a Cabinet decision.

Another point in connection with the appointment of Colonel Patrick is the recognition by the War Department that special qualifications in aerial administration are required from an Air Service Chief. If an officer without any previous experience or contact with the Air Service and with aircraft had been selected, it would have indicated that the Secretary of War regarded the Air Service merely as a part of the Army which any general officer could administer.

Everyone concerned with the best interests of the Air Service will watch with interest developments in connection with General Mitchell to learn whether or not this change was made to silence his active propaganda in behalf of expanded aerial activities by the Government.

General Menoher

FROM time to time mention has been made in AVIATION AND AIRCRAFT JOURNAL of the many fine qualities of the Chief of Air Service who has resigned. Coming as he did, without his seeking, to a branch of the service in which he had had no experience, it is only natural that he should have been, as he was, beset with numerous difficulties in the exercise of his duties.

His firm belief in the ultimate and decisive importance of the infantryman perhaps made it difficult for him to accept many of the claims of aircraft advocates, but he nevertheless tried to make his decision at all times on a broad basis. Any officer who tries to reconcile the traditional conceptions of warfare with the theories which constantly arise from perfected technical means must have great mental poise. And this is the quality which General Menoher possessed to a large degree.

If his tenure of the post of Chief of Air Service has demonstrated the difficulties which confront an officer in charge of the aerial arm who received his training in another branch of the Army, the experience will ultimately work out for the best of the Air Service.

General Menoher leaves the Air Service to return to service with troops in the field with the high regard of the entire aeronautical profession, and the numerous friends he made will follow his future career with sympathetic interest.

The Zeppelin-Staaken Monoplane

THE detailed description of the Zeppelin-Staaken 1000 hp. monoplane which is printed in this issue is worth the serious consideration of all aeronautical engineers. While we do not wish to claim that this type of construction, which embodies a very great number of untried innovations, represents as it stands the type of the future airplane, we believe that the great efforts which have been expended upon this machine with a view to solving various problems which come up in connection with commercial air transport deserve much thought.

The exclusive use of sheet duralumin in the structure of the machine is alone noteworthy. By employing duralumin in the shape in which it leaves the rolling mills, Dr. Rohrbach, the designer of the machine, has simplified the construction to a considerable degree, for sheet duralumin can be cut into the sections required without necessitating much special machinery, while the connections can be effected by means of riveting. Such a procedure is not only more simple but also less costly than tubular construction, where the different tubes have to be assembled either by welding or by sleeve joints, and which often presents great difficulties with regard to suitable connections.

The mounting of the engines in the depth of the wings is certainly ingenious and the passage way connecting the nacelles with the cockpit is no less so, although the wisdom of distributing the masses over so large a span may be questioned. Large airplanes are never extremely sensitive to control and wing engines rather seem to emphasize this defect. In this connection it is interesting to hear that Dr. Rohrbach is now building a similar machine which, however, will only be fitted with two engines.

Aeromarine Pioneering

There has been a steady development, during the past summer, of aviation for commercial purposes in the United States. Flying boats, particularly have come into their own as passenger carriers. When C. F. Redden, President of the Aeromarine Engineering & Sales Co., signed the contract with the United States Navy for the exclusive distribution of the naval coast patrol HS2 flying boats, he did so with the realization that for the next few years the development of commercial flying would principally be through the use of flying boats—owing to the fact that several years would be necessary to establish landing fields for overland flying. With the flying boat there is always a safe landing place available and a great part of the United States can be reached by inland water ways. The investment required to purchase reliable flying equipment has been rather high, but the opportunity to buy these Navy flying boats at less than one third their cost price enables individuals or corporations to start operating with every assurance of success. Plans for the sale of these boats were made with considerable care and thought. A full page announcement in a New York newspaper started the campaign; this was followed by letters to Governors, Mayors and Chambers of Commerce throughout the United States. When the flying season opened one of the demonstrating Aeromarine Navy HS2 flying boats was sent to the New England States. City officials were flown over their cities and on landing were full of praise for this new mode of transportation. Chambers of Commerce were addressed and the necessity of establishing air ports pointed out. As a result of these efforts the State Chamber of Commerce of Connecticut formed an Air Service Committee which has made provision for the establishing of Air Ports throughout Connecticut for next year. In Rhode Island the same interest was evidenced.

So successful was this demonstration trip in the New England States that Mr. Redden decided to send one of the same type of boats over America's inland water ways to Chicago, establishing an air and water route to that city over some of the most beautiful country in America. This Aeromarine Navy HS2 flying boat landed in New York from Chicago at the Aeromarine Air Port, 82d Street and the Hudson River Sept. 11, 1921 having flown 7,491 miles in 102 flying hours. This particular boat had been in service around New York since April 2 and covered the long trip without any repairs being made or extra equipment being added. The machine which was in command of H. A. Bruno, Advertising Manager of the Aeromarine Co., and piloted by D. G. Richardson with R. E. Greisinger as Assistant Pilot, has proven that flying in this type of flying boat is safe and delightful. The object of the flight was first to sell these flying boats and secondly to stimulate interest in flying and make provision for flying boat traffic. Mr. Bruno addressed the Chambers of Commerce in cities along the route and the following cities have signified their intention of putting in the necessary facilties for making an Air Port: Oswego, N. Y.; Erie, Pa.; Port Huron, Mich.; Petoskey, Mich.; Charlevoix, Mich.; Manistee, Mich.; Traverse City, Mich.; Muskegon, Mich. and Chicago, Ill.

"The outstanding feature of this flight," said Mr. Bruno, "Was the interest manifested by the various lake and river cities, the active cooperation of the Chambers of Commerce and Rotary Clubs, and the spirit shown by the newspapers editors in their desire to help stimulate this new mode of travel. I found in nearly every city visited several men of vision who were far-seeing enough to realize the importance of making provision for flying boat travel. I recommended to them that they put out a flat float 30 by 30 ft. in sheltered water—this float to be painted black with the initials of the city in white and surrounded by a white circle. The object of this float was to signal to the pilots that the water in this city was safe to land in, passengers could be disembarked and that mooring over night could be secured, also that necessary fuel and supplies were there. Yacht Clubs particularly were keenly interested in doing all they could for our welfare. In many cases the club property was thrown open so that those people wishing to fly could come in and get aboard our boat from the club piers. In northern Michigan the conditions are ideal for the operation of flying boats. Two of these boats were sold to Mrs. J. S. Baker who owns the Charlevoix Beach Hotel, Charlevoix, Mich. Mrs. Baker is a woman who has been keenly interested in aviation but until the arrival of the Santa Maria and the later arrival of our boat she had never had the opportunity of flying. She intends to place one of these boats in operation between Charlevoix and Detroit, and one between Charlevoix and Chicago. The automobile roads in northern Michigan are none too good, the train service is only fair; the possibilities in the use of flying boats in this territory are enormous.

"In one city, namely, Traverse City, I found M. D. Bryant who was distributor for Ford automobiles in that section. He also realized the possibilities in flying boats and we appointed him our sales agent for northern Michigan. He will use five boats for 1922 and possibly more.

"During the entire trip we had no mechanical trouble with the 400 hp. Liberty engine with one exception when we landed on Lake Huron on account of water in the carburetor. When one realizes that this boat has been away from the factory for two and a half months and has received no special care beyond proper handling, and has only been pumped out once during the entire trip, it is easy to see that our estimate of four to five years as the average life of this type flying boat was not extravagant.

"We carried hundreds of people on this long flying trip. We charged them $10 each, and carried five at a time. In some of the northern Michigan summer resorts we flew steadily from early morning until dark. One reason why flying boats have a commercial future is the fact that every man, woman

A Beauty Spot of Lake George as Seen From the Air

or child who got out of our boat after a flight, was smiling, said it was wonderful, and wanted to go again.

We arrived back in New York with several thousand dollars above our expenses, a record of sales in cities where these boats will create new patrons of aviation, and a knowledge that on the entire New York-Chicago inland water way route provision has been made for flying boat travel."

On July 7 the Aeromarine Navy HS2 six-passenger flying boat No. 10,044 left Keyport, N. J., at 11:30 a.m. A stop was made at the Aeromarine Air Port at 82d St. and the Hudson River, N. Y. C., where Mr. R. R. Blythe, Aviation Insurance Manager of Johnson & Higgins was taken aboard. Mr. Blythe was invited as a guest of the Aeromarine Co. to study the operating conditions of this flying boat and to see if it were not possible to reduce the rates for flying boat insurance. The weather was very hazy and the machine arrived at Albany early in the afternoon. An uneventful flight was made to Lake George where port was made over night at the Fort William Henry Hotel. This being the first flying boat to arrive on the lake this summer a great deal of interest was manifested. Several flights were made on the morning of July 8 with passengers. Late in the afternoon the boat flew north along Lake George and landed at Huletts Landing where more passengers were carried. The following afternoon Lake George was left behind and a landing made on Lake Champlain at Ticonderoga. Here the fliers were met by Mr. N. H. Wood, President of the Adirondack Air Service. Leaving Ticonderoga after lunch the flying boat proceeded to Camp Dudley, which is the New York State Y.M.C.A. Camp for boys, where the fliers were given a great reception. The weather had been good until that time, but on leaving the camp, rain was encountered, which lasted all the way to Plattsburg. Passengers were carried the following day at that city and a trip made to Burlington Vt., with a full load of passengers. On July 11, in the face of a 30 m.p.h. head wind the flying boat started for Montreal, flying up the Richelieu River and made a six miles over land to the St. Lawrence River. The weather was very bad with rain and low clouds. At one time on this flight the boat was lost in the clouds. A landing was made at Montreal in the afternoon of that day. The fliers were met by Mr. E. Greenwood, Hon. Secretary-Treasurer of the Aerial League of the British Empire, Canadian Division, who extended the courtesies of the city, and by Customs officials. The flying boat was examined, exactly the same as would be an ordinary vessel. On account of the stringent air laws in Canada, a representative of the Air Board passed on the machine and verified the pilot's record. Before leaving New York telegraphic permission had been received from the Canadian Air Board for this flying boat to proceed through Canada; on leaving Montreal an international clearance had to be secured exactly the same as if the flying boat were a vessel leaving for a foreign port. This was secured from the Tide Surveyor's office without any difficulty. The flying boat arrived at Alexandria Bay at 7:15 after a flight over the St. Lawrence River and Rapids. The fliers stayed at Alexandria Bay three days carrying many passengers and creating a great deal of interest. On leaving Alexandria Bay a heavy storm was encountered at the beginning of Lake Ontario and the boat turned back and made port at Cape Vincent. Leaving Cape Vincent after lunch the flying boat followed the Canadian side of Lake Ontario landing at Coburg for fuel. Having specific instructions from the Canadian Air Board to report by wire to Ottawa the arrival of this boat in any Canadian port a telegram was immediately dispatched. Inasmuch as the boat had again entered Canadian territory from the United States a visit was made to the Customs Office and clearance asked for Toronto. The Customs man was in a quandary; he stated that he had never before had to clear a flying boat and he did not know what to do, however, a marine clearance was finally signed and the party continued on its way. About twelve miles before reaching Toronto, a heavy thunder storm was encountered, but the boat continued on its way and made a safe landing at the Royal Canadian Yacht Club in Toronto. The fliers were enthusiastic about the reception tendered to them by the members of this club. They were all rain soaked and the commodore of the club not only saw to it that they had dry clothing, but also arranged a late supper. Mr. F. G. Ericson, Canadian distributor for the Aeromarine Co. was notified of the arrival of the boat and the following day there were a number of interested Canadians on the dock to examine what to them was a new type of flying boat. Toronto was left on July 15 in the late afternoon. The boat was headed straight across the lake and flew over Niagara Falls at an altitude of 3,000 ft. The day was remarkably clear and the falls lost their magnificence upon being viewed from such a height. At Buffalo a landing was made at the Yacht Club and the party were met by Commodore Sullivan of the Buffalo Yacht Club, Commodore Humphrey Birge, of the Buffalo Launch Club, Commodore Sidway of the Buffalo Launch Club and many former members of the Air Service. The fliers stayed at Buffalo over night and the following afternoon flew the Chief of Police and other police officials

H. A. Bruno, Captain and D. G. Richardson, Pilot with Burky, Mascot, of the Aeromarine HS-2L

over the high school regatta. Leaving Buffalo at 4:35, Erie, Pa,. was reached at 6 p. m. July 16. Four days were spent in Erie and many passengers were carried.

Mr. Bruno addressed members of the Chamber of Commerce of that city and they agreed, in cooperation with the Yacht Club, to make Erie an air port next spring. From Erie the fliers proceeded to Toledo and Detroit, arriving at that city at 4 o'clock on July 21, where they were met by Mr. Redden, Commander P. N. L. Bellinger, Jack Binns, Dr. Inches, Police Commissioner of Detroit, Mr. Metzger, President of the Detroit Athletic Club, and others. This latter party were waiting to leave on the Santa Maria on the next leg of her flight to Chicago.

The Aeromarine HS left Detroit July 21 and continued its flight toward Chicago stopping en route at Port Huron, Alpena, Mackinaw and Petoskey. This latter city was reached on July 23 and on the 24, which was Sunday, the fliers landed on Pine Lake, Charlevoix, Mich., one of the northern summer resorts of Michigan. The Santa Maria had overtaken the Aeromarine Navy HS and the two boats lay together on the Lake at Charlevoix Sunday afternoon. Many passengers were carried in both boats and intensive enthusiasm created. At 7:15 p. m. of that day both flying boats took to the air, each loaded with passengers. On account of the late start Traverse City was reached after a flight the latter part of which was made in darkness. The Santa Maria proceeded on the following day, but the Aeromarine Navy HS carried passengers for three days at Traverse City, and then left for Chicago, stopping en route at Manistee, Muskegon, Holland and St. Joseph.

The plane arrived at Chicago on Aug. 1 at 11:20 a. m. and landed off the Pageant of Progress pier in rough water. The party were met by Mayor Thompson and a committee of citizens. The Santa Maria had already arrived at Chicago on Thursday previous and was the center of attraction at the Pageant of Progress. From Aug. 1 to Aug. 17, the Aero-

marine Navy HS2 made flights along the Lake Michigan shore and up to Lake Superior.

The return flight was started August 18 with the same crew aboard with the exception of Mr. Blythe who had returned to New York earlier in the week. Bad weather was encountered while en route to Charlevoix and a landing made at Portage Point. Charlevoix was reached on the 20th, and on the 21st the flying boat flew back to Traverse City, carried passengers that afternoon, and then proceeded to Harbor Point. Five days were spent at this summer resort and passengers were carried from early morning until dark. The return flight followed the same route and was uneventful except that several severe storms were encountered; a particularly bad one overtaking the craft on Lake Huron, but a safe landing was made at Port Huron. From Port Huron the flying boat proceeded, stopping at Detroit and Erie, and then making a trip from Erie to Buffalo, where the old propeller was re-balanced, the various storms encountered en route having worn away the edges. Acting on telegraphic instructions the fliers flew back the length of Lake Erie and spent the night of Sept. 2 at Cedar Point. The return flight from Cedar Point was uneventful. Niagara Falls was flown over again at an altitude of 2,600 ft., and instead of following the Canadian side of Lake Ontario the boat flew along the New York side stopping at Olcott Beach and Oswego. Good time was made from there down to Montreal where the fliers spent the night of Sept. 9. On Sept. 10 the boat left Montreal at 2:56 and arrived at Burlington, Vermont at 4:45, and then proceeded to Plattsburgh where it remained over night. On Sunday, Sept. 11, at 11:11 a. m. in a light rain with low visibility and overhanging clouds the flying boat proceeded on the last lap of the long flight. Lake George was passed at an altitude of 3,000 ft. and Albany reached at 1:55. Here the crew had lunch and put fuel aboard leaving at 4:24 and landing safely in New York at 6:38 p. m.

NEW YORK TO CHICAGO

Left	Keyport, N. J.	11.30	a.m.	July 7
Arr.	Albany, N. Y.	12.55	p.m.	
Left	"	5.15		
Arr.	Lake George	5.56		
Left	" "	3.00		July 8
Arr.	Huletts Landing			
	Lake George	3.18		
Left	" " "	10.16	a.m.	July 9
Arr.	Ticonderoga			
	Lake Champlain	10.36		
Left	" " "	12.50		
Arr.	Camp Dudley	1.10	p.m.	
Left	" "	3.56		
Arr.	Plattsburgh	4.53		
Left	"	11.56	a.m.	July 10
Arr.	Burlington, Vt.	12.24		
Left	"	12.38		
Arr.	Plattsburgh	1.04		
Left	"	11.15	a.m.	July 11
	(Thirty mile head wind-(Lost above clouds)	11.40		
Arr.	Montreal	1.04	p.m.	
Left	"	5.15		
Arr.	Alexandria Bay	7.15		
Left	" "	11.00	a.m.	July 14
	Turned back to Cape Vincent in heavy storm and landed	12.08	p.m.	
Left	Cape Vincent	1.58		
Arr.	Coburg, Ontario (for fuel)	4.02		
Left	" "	6.15		
Arr.	Toronto in heavy rain	7.56		
Left	Toronto	5.25	p.m.	July 15
	Over Niagara Falls at 3,000 ft.			
Arr.	Buffalo	6.35		
Left	"	4.35		July 16
Arr.	Erie, Pa.	6.00		
Left	"	8.35	a.m.	July 20
Arr.	Toledo, Ohio	11.22		
Left	"	12.39	p.m.	
Arr.	Detroit	1.37		
Left	"	4.12		July 21
Arr.	Port Huron	5.13		
Left	" "	10.44	p.m.	July 23
Arr.	Alpena, Mich. (for fuel)	1.24	p.m.	
Left	"	4.15		
Arr.	Mackinaw	6.12	p.m.	July 23
Left	"	6.30		
Arr.	Petoskey	7.20		
Left	"	7.22		
Arr.	Harbor Springs	7.25		
Left	" "	10.48	a.m.	July 24
Arr.	Charlevoix	11.10		
Left	"	7.15	p.m.	
Arr.	Traverse City			
	(after dark with Santa) Maria).	7.51		
Left	Traverse City	3.25		July 28
Arr.	Manistee	5.05		
Left	"	5.17		
Arr.	Muskegon	5.20		
Left	"	2.54		July 30
Arr.	Holland	3.35		
Left	"	4.02		
Arr.	St. Joseph	5.01		
Left	"	10.26	a.m.	Aug. 1
Arr.	Chicago	11.20		

RETURN FLIGHT - CHICAGO TO NEW YORK

Left	Chicago	12.00	m.	Aug. 18*
Arr.	Holland	1.51	p.m.	
Left	"	3.00		Aug. 19
Arr.	Portage Point (gale-rain)	4.42		
Left	" "	9.02	a.m.	Aug. 20
Arr.	Charlevoix	10.16		Aug. 20
Left	"	11.04		Aug. 21
Arr.	Traverse City	11.59		
Left	" "	3.20		
Arr.	Charlevoix	4.25		
Left	"	9.31		Aug. 22
Arr.	Harbor Point	9.56		
Left	Harbor Point	3.52	p.m.	Aug. 27
Arr.	Mackinaw	4.40		
Left	"	10.00	a.m.	Aug. 30
Arr.	Cheboygan	10.35		
Left	"	12.05		
Arr.	Alpena	1.55	p.m.	
Left	"	3.06		
Arr.	Port Huron (gale-storm)	5.04		
Left	" "	9.10	a.m.	Aug. 31
Arr.	Detroit	10.30		
Left	"	2.03	p.m.	
Arr.	Erie	5.57		
Left	"	6.30		
Arr.	Buffalo	7.35		
Left	"	3.50		Sept. 1
Arr.	Erie	5.10		
Left	"	9.07	a.m.	Sept. 2
Arr.	Put In Bay	11.47		
Left	"	4.49	p.m.	
Arr.	Cedar Point	5.11	p.m.	Sept. 2
Left	" "	9.58	a.m.	Sept. 3
Arr.	Put In Bay	10.27		
Left	"	9.21		Sept. 4
Arr.	Geneva	11.19		
Left	"	3.00	p.m.	
Arr.	Erie	4.02	p.m.	
Left	"	5.07		Sept. 5
Arr.	Buffalo	6.27		
Left	"	2.04		Sept. 6
Arr.	Olcott	3.13		
Left	"	3.22		
Arr.	Oswego	4.17		
Left	"	11.28	a.m.	Sept. 9
Arr.	Off Kingston	12.05	p.m.	
Left	"	12.17		
Arr.	Thousand Islands	12.41		
Left	" "	2.50		
Arr.	Montreal	5.15		
Left	"	2.56		Sept. 10
Arr.	Burlington	4.45		
Left	"	5.31		
Arr.	Plattsburgh	6.02		
Left	"	11.11	a.m.	Sept. 11
Arr.	Albany	1.55		
Left	"	4.34		
Over	New York	6.38		

* From Aug. 1 to 17 demonstrating flights were made over Lake Michigan and Lake Superior.

Rockaway Hangar and D-6 Burned

The non-rigid airship D-6 was totally destroyed by fire in the hangar at the U.S. Naval Air Station, Rockaway, L. I., shortly before 9.00 o'clock August 31, 1921. The D-6 was a new airship, non-rigid type, and undergoing trials at the time of the fire. The dimensions of the D-6 were:

Gas capacity, 190,000 cubic feet.
Length overall, 198 ft.
Diameter, 42 ft.
Power plant, 2 Union 125 hp. engines.
Estimated full speed, 58 m.p.h.
Estimated endurance at speed of 40 m.p.h., 37 hours or 1480 miles.
Cost, $90,000. Hanger $110,000.

The fire totally destroyed the airship and hangar. Nobody was seriously hurt. Three or four men were reported superficially burned. The exact cause of the fire has not yet been determined. A Board of Investigation was immediately ordered at the Naval Air Station, Rockaway. Reports indicate that the fire started in the car probably by ignition of the gasoline carried as fuel.—Naval communique.

Aircraft Handbook

A new edition of the *Aircraft Mechanic's Handbook*, Colvin and Colvin, has been published and is for sale by the Pioneer Instrument Co., 136 Havemeyer St., Brooklyn, N. Y.

General Patrick Appointed C. of A. S.

President Harding sent on September 21 to the Senate the nomination of Col. Mason M. Patrick to be Chief of Air Service with the rank of Major General to succeed Maj. Gen. Chas. T. Menoher.

In announcing the appointment the Secretary of War intimated that General Menoher might receive an assignment as commanding general of one of the Corps Areas. He also stated that there had been a misunderstanding regarding Brig. Gen. Mitchell's status. General Mitchell wrote the Secretary offering to withdraw as Assistant Chief of Air Service so that the War Department may have an opportunity of completely reorganizing the Air Service. The Secretary said that the requests had been eliminated and General Mitchell would remain in his present position for the present.

The following statement regarding General Patrick was issued by the War Department:

General Patrick succeeds to the vacancy created by the favorable action of the Secretary of War on Maj. Gen. Charles T. Menoher's request to be relieved as Chief of the Air Service and assigned to the command of troops.

General Patrick is selected for this important position by reason of the special qualifications for it which he demonstrated as Chief of the Air Service of the A.E.F. and because of the exceptional ability as an executive and organizer which he has shown in other important capacities.

General Patrick was assigned to command the Air Service in France when it was in the process of organization. and quickly brought it to a high state of efficiency. For his services in this capacity, he was decorated with the Distinguished Service Medal with the following citation:

"For exceptionally meritorious and distinguished services. He displayed much ability and devotion as Director of Construction and Forestry, and later, as Chief of the Air Service of the American Expeditionary Forces, he perfected and ably administered the organization of this important department."

In the direction of the Air Service of the A.E.F., which included projects in England, France and Italy, he was responsible for the training of fliers, the securing of supplies and machines, the selection of sites for Air Service uses, and the supervision of the fighting of American fliers on the Western Front.

At the time of the Armistice, he had under his control an Air Service comprising a personnel of more than 78,000 men; 6,364 airplanes and about 300 balloons secured from the United States and our Allies; more than 802 hangars; and 32,000 acres of leased lands on which had been constructed 11,000,000 square feet of buildings.

Among the prominent achievements of General Patrick as Chief of the Air Service, A.E.F., was the development of the great Air-Service Production Center at Romorantin, where all airplanes and engines received from the United States were assembled and dispatched to their destination, and the Aviation Acceptance Plant at Orly where the material from European sources were similarly received and dispatched; and the organization of a system of supply which was second in magnitude only to that of the Quartermaster Corps.

His ability as an executive and organizer, which led to this important assignment in France, had been demonstrated when he was Chief Engineer of the S.O.S. and Director of Construction and Forestry in the earlier days of the A.E.F. In this capacity, he had under his supervision construction work of every description in France and England. This included the construction of docks at Bordeaux and elsewhere, the vast hospitalization scheme of the A.E.F., and the extensive storage plants which were cities in themselves. While serving as Director of Construction and Forestry, the construction of Air Service projects was also under his control.

In the World War, he was promoted from Colonel to Major General. He was decorated with the Order of the British Empire (Knight) by the British Government; Legion of Honor (Commander) by the French Government; Order of St. Maurizio and St. Lazzaro (Commander) by the Italian Government; and the Ordre de Leopold (Commander by the Belgian Government.

General Patrick entered the Military Academy in 1882, graduating second in his class in 1886. Prior to the World War, he served on several important assignments as Engineer of River and Harbor Projects and as Commandant of the Engineer School at Washington Barracks. He did exceptional work as Chief Engineer of the Army of Cuban Pacification, 1906-8, and in the Brownsville District in 1916.

At present, General Patrick is in command of the post and Engineers' School at Camp Humphreys, Virginia.

MAJ. GEN. MASON M. PATRICK, NEWLY APPOINTED CHIEF OF AIR SERVICE
(c) *Underwood & Underwood*

Meeting of the F. A. I.

The next meeting of the International Aeronautical Federation (F. A. I.) will take place Oct. 26 to 28, next at Madrid, Spain. The meeting will be attended by delegates from the eighteen countries which possess active affiliated aero clubs, namely, Argentine Republic, Belgium, Brazil, Czecho-Slovakia, Denmark, France, Great Britain, Italy, Japan, Netherlands, Norway, Poland, Portugal, Spain, Sweden, Switzerland, United States and Uruguay. Two of the affiliated national bodies, those of Egypt and Russia, are considered inactive, while three ex-enemy countries, Austria, Germany and Hungary, were excluded from the F.A.I. during the late war.

Among the subjects which will come up for consideration at the Madrid meeting will be the re-admission of the ex-enemy countries, particularly of Austria, which is urged by the affiliated bodies in Spain, the Netherlands and Sweden. Requests for affiliation have been received from Finland, Haiti-San Domingo, and Shanghai. The provisional admission of Chile and China decreed by the previous meeting of the F. A. I., on Jan. 9, 1921, will be submitted to ratification.

Bombing Tests of the U.S.S. Alabama

To enable the Army Air Service to pursue bombing experiments against warships supplementary to the tests conducted last June and July off the Virginia Capes, the Navy Department has turned over to the War Department the obsolete battleship Alabama.

The objects of the tests conducted with the Alabama are described in an Army Air Service communiqué as follows:

Objects of the Tests

(a) To determine what explosive or gas effect is needed to put seacraft *out of action*. It has been demonstrated that seacraft may be utterly destroyed; but obviously, if the system of fire control, communication and mechanical installations of vessels can be disrupted and the nervous systems of the human beings who man seacraft can be shattered, the efficiency of the craft is destroyed without necessarily sinking it.

(b) To determine the effect of smoke bombs in concealing the attack of aircraft and of the effect of white phosphorus clouds in neutralizing anti-aircraft elements.

(c) To determine the effect of machine gun fire and fragmentation bombs in clearing the ship's decks of anti-aircraft units.

(d) To determine the feasibility and effect of night attacks on seacraft.

There will be two distinct phases in the operation—the first, purely experimental in its nature to determine the effects of various auxiliary agents in the attack, the second, to consist of attack proper, simulating as nearly as practicable service conditions.

Location of Target

Target will be located in Chesapeake Bay in the vicinity of the Ex-San Marcos. Operations at the target will be controlled from the subchaser.

Board of Observers

A Board of Observers consisting of three Air Service officers, two Ordnance officers and two officers of the Chemical Warfare Service will inspect the results of tests and attacks on the battleship as indicated hereafter.

An advanced airdrome will be established near the target. A radio station will be established at that point by the Communications Section. The sub-chaser, one gig, and the Sea Hornet will be stationed at this airdrome during the operations for the purpose of transporting the Board of Observers and other visitors to and from the scene of the bombing, and for rescue work. During bombing the Board of Observers will be stationed aboard the sub-chaser.

Description of Tests and of Attacks

In the preliminary tests a sufficient number of bombs and flares of all types will be dropped to determine the effect of each and the best method of tactical employment. It is anticipated that experiments with tear gas bombs will give important data on the attack of battleships by gas bombs. In similar manner the effect of phosphorous and smoke bombs will be determined. It is believed that smoke screens may be used with great effect in protecting the attacking airplanes from anti-aircraft defenses of seacraft. In order to determine this a series of tests will be held in which the various branches of aviation will make simulated attacks on the battleship through smoke screens.

Night Attacks

The tactical effectiveness of flares in illuminating the attack of battleships will be determined in the preliminary tests as well as the effect of white phosphorus in outlining seacraft at night with sufficient distinctness to permit accurate attacks.

Tests will also be conducted to determine the effect of the 1100-lb. armor piercing bomb.

Upon the completion of the above named tests an attack will be made on the battleship. This will be for tactical purposes and will employ the 1100-lb., 2000-lb. and 4000-lb. demolition bombs.

1st Day. Tests with Chemical Agents

In order to determine the effect of each of the following type of chemical bombs, tests will be made in the order listed below:

TESTS	PLANES	TYPE OF BOMBS	NUMBER OF BOMBS
1	1-M.B.11	50 lb. smoke bomb, Navy type	4
2	1-D.H.4B	25 lb. Mark I, Phosphorous	4
3	1-M.B.11	100 lb. Mark II, Phosphorous	4
4	1-M.B.11	50 lb. Mark III White Phosphorous	2
5	2-D.H.4B	25 lb. Mark I, C & C T	16
6	2-M.B.11	50 lb. Mark I (lead lined) Tear Gas	8

In each attack one plane carrying the same number and type of bombs will accompany the attacking planes to the objective, but will not release the bombs unless one of the planes is forced to abandon the mission.

2nd Day. Smoke Screen Tests

In order to determine the best method of employing smoke screens with the various branches of aviation, experimental flights will be made by pursuit planes, light bombing planes, and heavy bombing planes. Only light bombs will, however, be used and their effect on targets observed. List of tests in the order in which they will be conducted follows:

TESTS	PLANES	TYPE OF BOMBS	NUMBER OF BOMBS
1	Fl. of 3 D.H.4B	50 lb. smoke bombs, Navy type	12
	Fl. of 5 SE-5's	25 lb. Cooper bombs	20
2	Fl. of 3 D.H.4B's	100 lb. Mark I leaded with phosporous	12
	Fl. of 3 D.H.4B's	50 lb. smoke bomb Navy type	12
3	Fl. of 3 D.H.4B's	50 lb. smoke bomb	12
	Fl. of 3 M.B.11's	100 lb. Demolition Mk. I	12
4	1 M.B.11	1110 lb. Armor piercing shell	1

Upon the conclusion of each test there will be an examination of the Alabama by the Board of Observers to determine the results obtained.

1st Night. Tests of Illuminating Bombs and Flares

In order to investigate the results of bombing at night and the illuminating effects of parachute flares and white phosphorus bombs as an aid in accurately locating the objective, the following tests will be conducted in conjunction with the dropping of illuminating flares and bombs.

TESTS	PLANES	TYPE OF BOMBS	NUMBER OF BOMBS
1	1-D.H.4B	50 lb. Mark III (leaded with white phosphorous)	2
	1-D.H.4B	25 lb. Mark I, Demolition	4
2	1-D.H.4B	Michelin Flare, Mark I	4
	1-D.H.4B	25 lb. Mark I, Phosphorous	4
3	1-D.H.4B	50 lb. Mark III (leaded with white phosphorous)	2
	1-M.B.11	100 lb. Mark I, Demolition	8
4	2-D.H.4B	30 lb. Mark III (Leaded with white phosphorous)	4
	2-M.B.11	100 lb. Mark I, Demolition	12
5	1-D.H.4B	Michelin Flare, Mark I	4
	1-D.H.4B	100 lb. Mark I, Phosphorous	2
	1-M.B.11	100 lb. Mark I, Demolition	6

Upon the conclusion of these attacks there will be an examination of the Alabama by the Board of Observers to investigate the results obtained.

2nd Night

On the 2nd night an attack will be made for the purpose of destroying the Alabama. Following will be the order of attacks:

ATTACK	PLANES	TYPE OF BOMBS	NUMBER OF BOMBS
1	1-H.P.	4000 lb. Demolition (if available) (Successive attacks will be made by a single H.P.)	3
2	8-M.B.23	2000 lb. Demolition	8

First Day of Tests

The first day of tests (chemical agents) was Sept. 23. The following particulars of these tests are reproduced by courtesy of *The New York Times*:

A fleet of planes from Langley Field poured a constant fire of chemical bombs on the ship, at times hiding her completely from view in dense clouds of white smoke and flooding her decks with tear gas.

At noon a Martin bomber flew by at seventy-five miles an

hour, dropping four 100-pound phosphorus bombs, each of which struck squarely on the vessel. As the "eggs" hit the battleship the phosphorus splashed up and fell to the decks in gray clusters of spray. Flashes of flame glowed through the thick smoke, but were almost instantly obscured by a cloud of dense white fog.

The Alabama was hit on the after fighting top, on the bridge, just aft the forward turret and on the stern. For a long time flames burned the planking of the Alabama's deck, and when the Army and Navy observers went to view the effect upon the target the fire was still raging.

As no men were stationed on board the Alabama during this or any other test, the personnel of the ship was represented by wooden boxes at various posts. Practically every one of these was scarred and discolored by the phosphorus gas, showing that if the ship had been manned her officers and enlisted men would have been knocked out by the choking chemicals.

Besides phosphorus bombs, smoke bombs were used to show that a heavy smoke screen could be so dropped that it would entirely hide oncoming aircraft and also the target itself.

Still another experiment was conducted with tear-gas bombs. Three direct hits were made with bombs manufactured at Edgewood Arsenal especially for use during the Mingo Miners' war.

These contained only a 10 per cent mixture of tear gas for they were intended to frighten rather than to injure for a long period. The bombs were so drastic in their effect that forty-five minutes after they struck the vessel observers were unable to penetrate the ship without gas masks.

Night Bombing Test

The night bombing test, Sept. 23-24, resulted in several direct hits being made on the Alabama by attacking airplanes.

Sopwiths darted down at an angle of 45 degrees as they neared the vessel, and the airmen let loose their machine guns as in actual battle combat. The purpose of this was to destroy the morale of the attacked ship's personnel.

As they crossed over the ship from prow to stern the aviators dropped their demolition bombs in pairs. The gleaming missiles were easily seen as they fell through the air. Many struck in the water near the ship. One hit the forward turret and another the aft basket mast. Still another struck a searchlight and a fourth smashed the bridge to pieces.

The aviators seemed to gain better aim each time they returned to the target. At first they were inclined to shoot short of the vessel, but, learning the wind, they held their fire until close in at about a 200-ft. range.

Following the Sopwiths came the four Martin bombers. The first dropped two of her 300-lb. bombs in the sea beside the Alabama from a height of 1,500 ft., but the third machine let go her two bombs directly on the forward deck. As the first bomb struck the prow of the Alabama a column of flame shot up.

This hit was considered a feat by the Air Service observers because the wind had shifted and the Martin bombers were crossing the target amidships, leaving a narrow target.

Second Day Test

The second day test, Sept. 24, started with nine DH-4 Air Service machines laying a smoke screen across the windward side of the Alabama. Some of the smoke bombs did not ignite, but eight caught fire and a fan shaped cloud arose which hid all the vessel except her bow.

This test was followed by bombing attacks with 300-lb. bombs dropped by Martin bombers. One of these bombs hit on the bow of the ship and tore through her first deck, spreading the sides of the jagged hole upward so far that the guns of her forward turret would have been unable to sight above the wreckage.

The crew's quarters below this deck were demolished. A second bomb, dropped with the first, followed through the hole made by the first, causing more destruction.

In addition to the Martin bombers, a fleet of eight SE-5 planes dropped thirty-two bombs, many of which struck the ship in vital spots. Her communication systems were shot away, her fighting masts badly damaged and some of her searchlights were put out of commission.

So terrific were some of the explosions that the battered Alabama tore loose from her anchor chains and drifted down toward the wreck of the San Marcos and the Indiana.

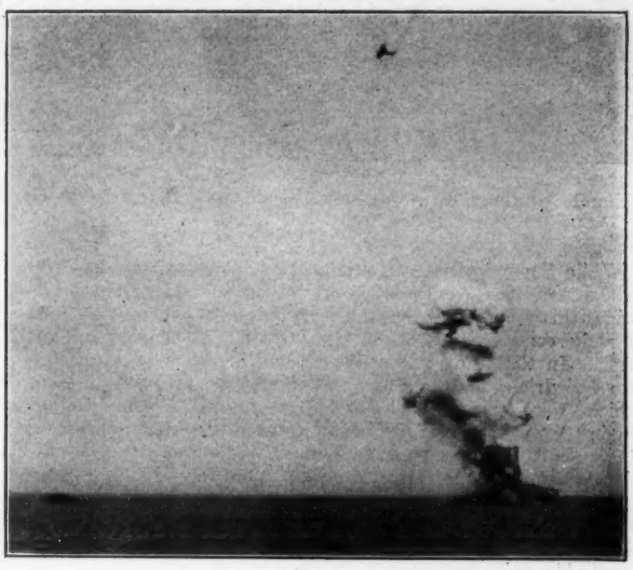
The next morning the ship was seen to be on fire, and mine sweepers made fast to the hulk and fought the fire back into the holds, where it was not believed it would accomplish much additional damage.

The Alabama is Sunk

The final attack on the Alabama, on Sept. 26, resulted in the ship being sunk by a 2000-lb. demolition bomb.

The bomb tore off her mast, destroyed her superstructure and turned her over on her side in shallow water. Six other planes almost simultaneously rained 1,000 and 2,000-lb. bombs on the hulk as she went down. Four hit the vessel as she trundled over and the remainder landed in the water within 20 to 30 ft.

The plane which gave the Alabama her death blow flew over the vessel and dropped a 100-lb. sighting bomb. Her pilot



THE ALABAMA AFTER A MARTIN BOMBER DROPPED TWO 300-LB. BOMBS ON HER, SCORING DIRECT HITS
Photo International

then guided her back, and from observations taken the 2,000-lb. bomb was dropped in the identical spot where the sighting bomb hit—directly at the base of the mainmast.

The scoring by the seven planes participating in the final attack was 100 per cent, Air Service officers said.

American Airways, Inc.

The American Airways, Inc., operating a training school for air mechanics, and aerial 'garage' at College Point, L. I., announce that they are in an excellent position to handle overhaul jobs for seaplanes which have had a hard season and wish to get fitted out for the winter. The facilities for this work are excellent, and all repairs, etc., are under the direct supervision of Captain T. L. Tibbs, formerly of the Aeromarine Airways. The work is all done on a basis of actual cost of material and labor, plus a twenty-five per cent charge for overhead. The result is high class work done very reasonably.

In addition to this, cadet-mechanics are able to do a great deal of the detail work which usually runs into considerable money and for this there is no charge.

The American Airways hangars are located on the Point at College Point, which is the promontory on the northeast of Flushing Bay and the East River. The building is part of the College Point Boat Corp., and is quite large and easily identified by wireless, flag and slipway.

Seaplanes will also be built reasonably, to order, as well as fast 'aqua-sleds' with airplane motors and propellers.

The Zeppelin-Staaken 1000 Hp. Monoplane

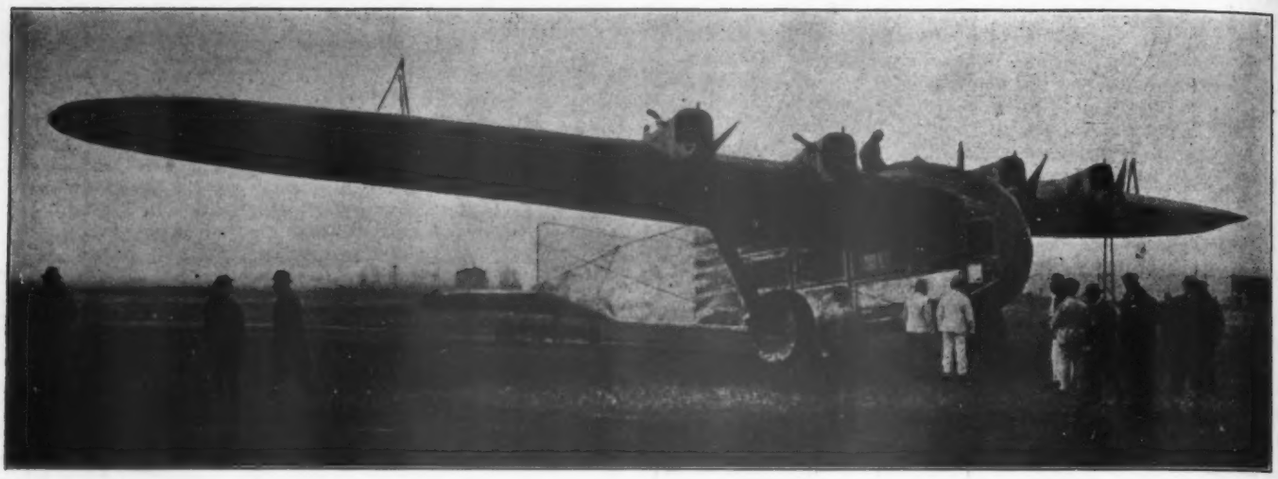
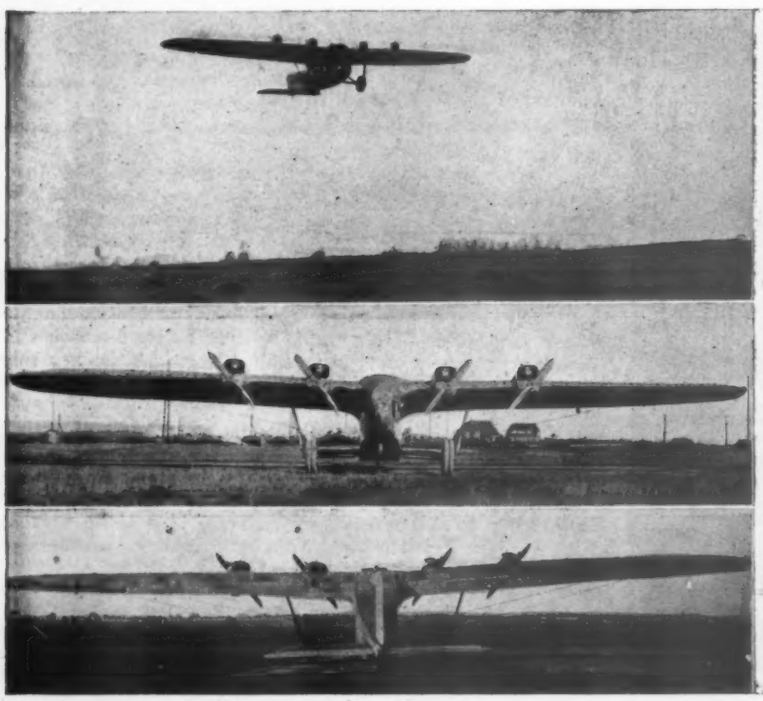


FIG. 1. GENERAL VIEW OF THE ZEPPELIN-STAAKEN 1,000 HP. MONOPLANE IN ITS ORIGINAL FORM WITH AN OPEN CONTROL COCKPIT

While the principal activities of the Zeppelin Co. had, up to the Armistice, centered upon the production of rigid airships, this important German firm has ever since 1912 been actively concerned with the construction of heavier-than-air craft. In that year it created, under the name of Flugzeugbau Friedrichshafen, its first subsidiary firm, the activities of which were exclusively devoted to seaplane construction. During the war the "F. F." company built a great number of single and twin engine seaplanes, including torpedo-carriers, and, through their excellent qualities the firm soon became one of the two principal contractors to the German navy. In 1917 the firm concentrated on the production of twin engined bombers which were largely used by the German army air service.*

* See description in AVIATION, June 1 and 15, 1918.

In the meantime the Zeppelin Co. established two more aviation plants, one at Seemoos, near Friedrichshafen, and the other at Lindau, Bavaria. Both establishments were created with a view to applying to heavier-than-air craft design the experience the Zeppelin airship works had gathered in duralumin construction. The Seemoos plant specialized in the construction of seaplanes built to the designs of C. Dornier, while the Lindau plant produced mainly single and two seater fighters besides a few giant airplanes. At the same time the Zeppelin Co. started experimenting with multi-engined giant airplanes at its Staaken plant and this work was conducted under the supervsion of Dr. Rohrbach. Most of the airplanes built at the latter plant were four or five engined, with individual propellers, but there was also produced an experimental six-engined type in which the engines were



FIGS. 2, 3, 4 (LEFT). VARIOUS VIEWS OF THE ZEPPELIN-STAAKEN. —FIG. 5 (RIGHT). INTERIOR VIEW OF THE PASSAGEWAY PROVIDED FOR IN THE WING STRUCTURE WHICH CONNECTS THE CONTROL COCKPIT WITH THE ENGINE NACELLES

geared together in pairs to three propellers. The experience Dr. Rohrbach thus gained appears to have justified his faith in giant airplanes, but at the same time it must have disclosed some of the serious drawbacks of gearing several engines to a single propeller for the latest giant machine built to his designs, the Zeppelin-Staaken 1000 hp. monoplane, is equipped with four wing engines driving individual propellers.

Inception of the Machine. Construction work on the 1000 hp. monoplane started in May, 1919, but owing to certain restrictions due to the Inter-Allied Commission of Aeronautical Control the machine was only completed in September, 1920. Difficulties were experienced in obtaining the release of the 260 hp. Maybach engines for which the monoplane was designed as they were to be destroyed with other war material. The commission was finally prevailed upon to lend the desired engines for the duration of the tests, after which they were to be returned to the Allied authorities for destruction in accordance with the peace terms.

The description which follows is based in part on an inspection of the machine by our correspondent for Central Europe, Erik Hildesheim, and in part on an article Dr. Rohrbach recently contributed to the journal of the Society of German Engineers, from which the principal data and line drawings have been reproduced. We are also indebted for certain constructional details to a description of the machine by E. H. Lemonon in *L'Aérophile* of July 1-15, 1921.

The Zeppelin-Staaken 1000 hp. monoplane, known as model E.4.250, was built with a view to continuing the development of multi-engined airplanes produced during the late war, mentioned above, and to gain experience in the design of large commercial machines. The Zeppelin Co. originally intended to run this monoplane in competition with the passenger airship Bodensee between Berlin and Friedrichshafen to determine the respective merits of heavier-than-air and lighter-than-air craft in the light of commercial operation. The conditions resulting from the peace terms, however, prevented them from carrying out this plan.

Weights. The model E.4.250, of which several full views are shown in Figs. 1 to 4, is entirely built of duralumin, including the covering of the wings and of the fuselage. The weight empty is 13,360 hp., but Dr. Rohrbach confidently expects to lower this figure in later construction, based on his experience gained in building the first machine. Fully loaded the monoplane weighs 18,700 lb., giving a useful load of 5,340 lb., which corresponds to a carrying efficiency of about 28 per cent. The wing loading is unusually heavy,

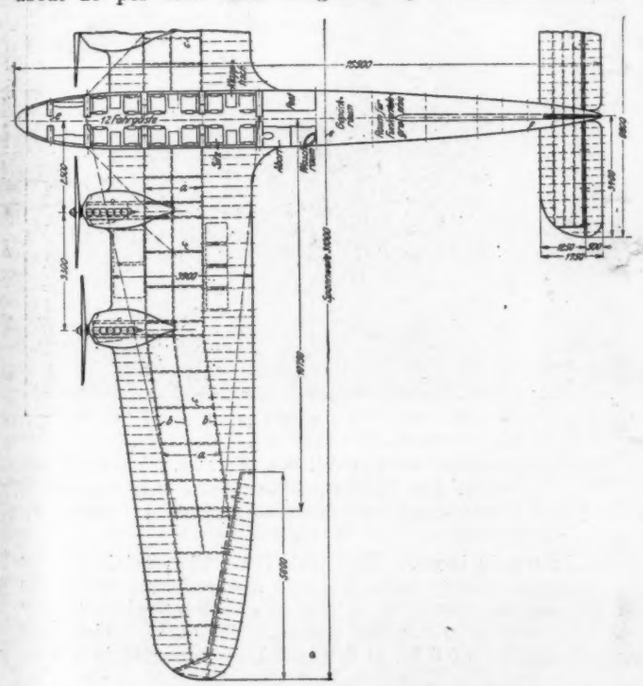


FIG. 6. PLAN OF THE Z.S. 1000 HP. MONOPLANE SHOWING CONSTRUCTION OF WINGS AND ARRANGEMENT OF FUSELAGE

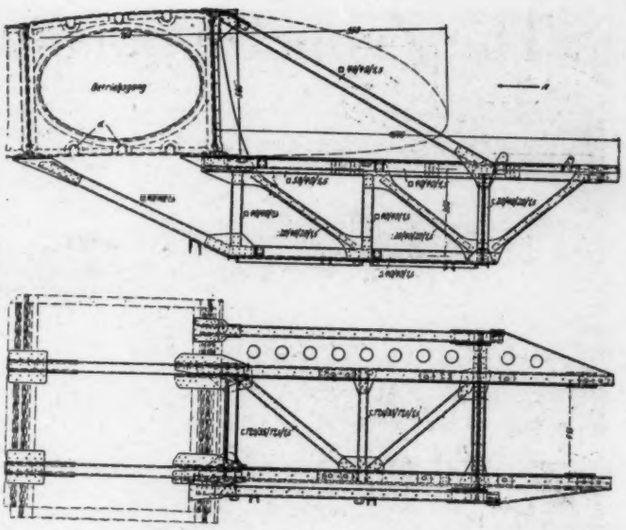


FIG. 7. SIDE ELEVATION AND PLAN OF AN ENGINE MOUNTING. THE ENTERING EDGE OF THE WING IS SHOWN BY A DOTTED LINE

being 16.4 lb. per sq. ft., as a result of which the machine takes off and lands at very high speeds, these being 68 and 80 m.p.h. respectively.

In the course of some twenty test flights made so far a maximum horizontal speed of 130 m.p.h. was attained with the engines throttled down 100 r.p.m. below their normal full speed. With the engines "all out" it is expected to better this performance.

Dimensions. The overall height of the machine, measured to the tip of the propellers in vertical position, is 17 ft., and the overall length is 60 ft. The wings have a span of 102 ft., a maximum chord of 12 ft. 9 in., and a maximum depth of 2 ft. Measured on the mean chord the aspect ratio of the wings is 1: 9.1, as compared with the usual figures of from 1 : 5 to 1 : 6.5 which prevail in monoplane construction.

The Wings. The general outlay of the wings is shown in plan in Fig. 6, while Figs. 7, 10 and 11 illustrate various details. The wings are built around a double box girder *a* (Fig. 6) which is composed of three I section beams *b* and a number of transverse frames *c*. These component elements, which are all of sheet duralumin of diverse sections, are riveted together by means of angle strips. To this box girder are riveted lattice work ribs, as shown in Fig. 10, and the upper and lower plating of the wings. The duralumin sheets of the plating decrease in thickness from 4 mm. at the roots to 2 mm. at the tips, and are internally reinforced by U section strips. The strength of the plating is sufficient to enable a man to walk over any part of the wings without causing buckling.

The box girder is equal in width throughout the span of the wings, but it decreases in depth from the outer engine nacelles. Up to that point the transverse frames in the front portion of the box girder are hollowed out in the form of an oval which is large enough to enable a man to crawl through it. The resulting passage way leads from the control cockpit, in the fuselage, to the engine nacelles. Fig. 5 is an internal view of this passage way, the structure being shown standing on its short side. The U section strips which stiffen the wing plating are plainly visible.

In the remainder of the double box girder the transverse frames are merely hollowed out for lightness.

Engine Nacelles. The engine nacelles are built up around the structure shown in Fig. 7. A view of the engine nacelle with the streamline cowling partly removed is illustrated in Fig. 11, from which the means of access from the wing passageway may be grasped. On the carburetor side of each of the four engines, which are 260 hp. Maybach's, sufficient space is provided for so a mechanic may adjust the engines in flight. Fig. 12 shows a complete engine nacelle with its streamlined cowling and tractor propeller, which is direct

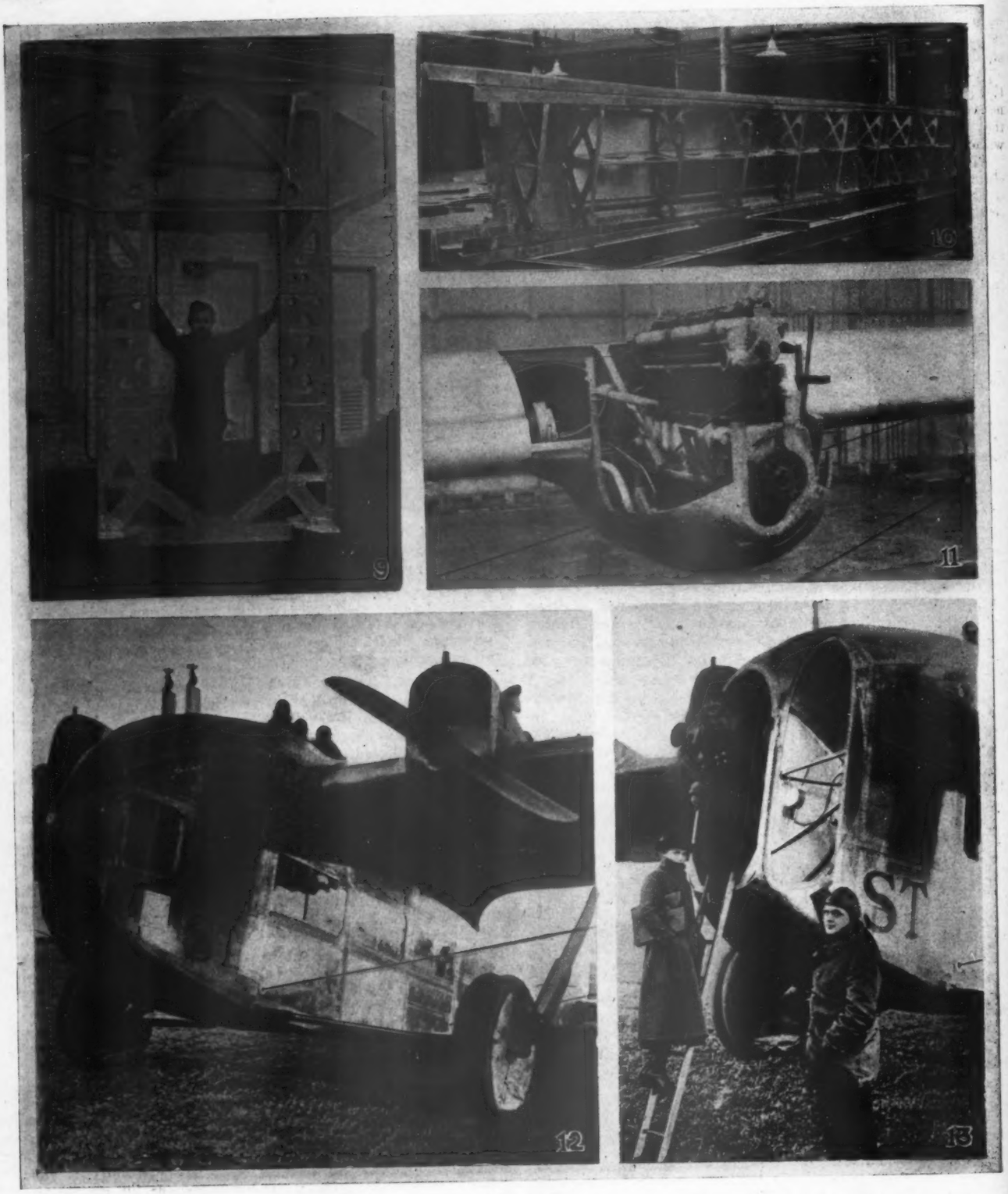


FIG. 9. A MAIN FUSELAGE FRAME WITH WING ROOTS. FIG. 10. RIB CONSTRUCTION OF THE WINGS. FIG. 11. AN ENGINE NACELLE WITH THE COWLING REMOVED, SHOWING ACCESS TO WING GANGWAY. FIG. 12. THE NOSE OF THE MONOPLANE WITH AN ENGINE NACELLE COWLED IN. FIG. 13. FRONT ENTRANCE TO THE CABIN THROUGH A HINGED DOOR

driven. The inner engine nacelles are mounted 8 ft. 3 in. from the centerline of the airplane and project slightly in front of the outer nacelles, the latter being mounted 10 ft. 10 in. from the inner nacelles. This staggered mounting has apparently been adopted to overcome to a certain extent the blanketing effect of propellers turning close to one another.

The gasoline tanks are fitted in the wings between the engines, in front and aft of the box girder, and rest on angle sheet duralumin bearers lined with felt. The fuel is gravity fed to small storage tanks mounted alongside the crankcases of the engines, whence it is sent to overflow carburetors by means of engine driven fuel pumps. The tanks, which have a total capacity of 6 hr. at full speed, are mounted in a compartment which is bulkheaded off from the rest of the wing structure. To prevent the formation of an explosive mixture due to gasoline vapors, the compartment is ventilated by

means of tubes leading to the lower side of the wings where the air stream creates a strong suction. The passageway is similarly ventilated as it contains the gasoline piping. The aileron cables and carburetor control leads are also carried in this passageway which is slightly heated by the engines. Their noise is sufficiently muffled in this portion of the machine so that members of the crew can communicate with one another without difficulty.

All connections between the various members of the wing structure and engine mounting, as well as of the fuselage, are secured by riveting, welding being eliminated from the construction to insure greater dependability.

Ailerons. The ailerons are of the balanced type and their axis, as may be seen from Fig. 6, is not perpendicular to the fuselage, being inclined instead so as to get the maximum efficiency from the air stream. As the latter is known to deflect at the wing tips, the wing shape and aileron arrangement of the Zeppelin-Staaken monoplane is designed to take advantage of this phenomenon. The ailerons are built up of sheet duraumin lattice ribs and plating in the manner of the wings.

Fuselage. The fuselage is built up of square sheet duralumin frames *e* (Fig. 6) and four corner longerons, to which the outer skin is riveted. The latter is, like the wings, reinforced by U section strips. The transverse frames are so constituted as to leave a clear passageway directly aft to the tail unit. The two frames to which the wings are attached, shown in Fig. 9, have the wing roots built integrally with the rest of the structure.

The cabin is built into the portion of the fuselage extending from the entering edge to the trailing edge of the wings. Twelve easy chairs with folding tables between each pair are provided for the passengers; for short flights six more passengers can be accomodated on folding seats. Aft of the cabin on one side there is a washroom, and on the other a mail compartment. which are divided by a gangway leading to the baggage room, and from there into the radio cabin. The latter is situated farthest aft to be as free from the engine vibration as possible.

The nose of the fuselage is fitted with a folding door, Fig. 13, which affords entrance to the cabin and to the control cockpit. The space between the door and the forward wall of the cabin, into which passengers are permitted to go only during flight, answers the purpose of a collision compartment in bad landings. For this purpose the elements which constitute the collision compartment are so built that they will undergo deformation before transmitting the full force of the shock to the main structure of the fuselage.

The control cockpit is on top of the cabin, and affords accomodation for two pilots and two mechanics, who sit abreast in pairs. This cockpit was originally open, as may be seen from Fig. 12, but in the test flights the draft proved so uncomfortable that it was decided to enclose the cabin as shown in Fig. 14. The cockpit is equipped with a dual controls, excepting the engine controls, which are fitted between the pilots.

Landing Gear. The landing gear, one half of which is illustrated in Fig. 15, is noteworthy for its clean lines. It is composed of a pair of twin wheels, 1500 mm. by 200 mm., mounted on a divided axle which is held in place by two streamlined steel tube guides attached to the bottom longerons of the fuselage. The axle is sprung by steel spiral springs, manufactured by the Krupp works, and which are carried in grease inside two telescopic tubes connecting the wheel ends of the axle with the wings. The latter are suitably reinforced at these points, which were specially chosen so as to cause only minimum stress under the impact of landing.

This landing gear has the advantage of doing away with initial tension such as occurs in rubber sprung landing gears, and thus permitting the airplane to land much more softly—a feature which reduces to some extent the hazard of landing at 80 m.p.h.

With the oleo-pneumatic landing gear of the Zeppelin-Staaken the wheels are enabled to roll over the ground without interruption while the airplane is still partly supported by the wings. In proportion as the speed decreases the weight of the machine is transmitted to the landing gear, until the machine stops after a run of from 500 to 600 ft. This landing gear has proven so satisfactory that it was possible to do away with the third wheel which had originally been provided for underneath the nose of the fuselage.

Wing Cables. It has been said above that the wings are attached to the roots of the two main fuselage frames shown in Fig. 9. However, as no previous experience was available regarding the strength of the box girder around which the wings are built up, it was decided to afford the wings additional bracing in the form of strong cables, two of which brace each wing to the lower portion of the fuselage. These cables are stressed to relieve the wing girders of the bending moments resulting from the air forces and from the cable truss, so that the wing girders only have to withstand small stresses

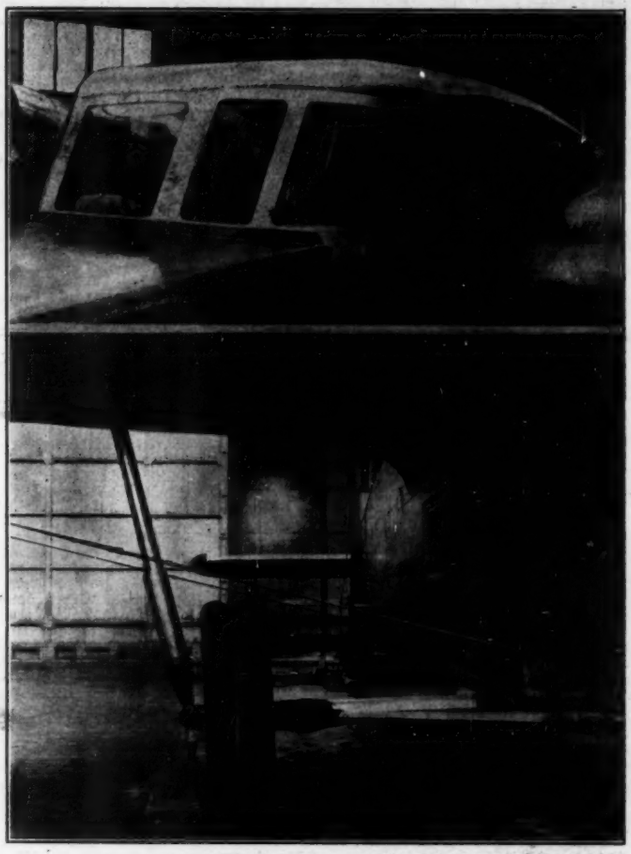


FIG. 14 (TOP). THE ROOF WHICH WAS ADDED TO THE COCKPIT AFTER TRIALS.—FIG. 15 (BOTTOM). DETAIL OF THE LANDING GEAR

in flight and are able to absorb the moments of torsion which arise from a one-sided attack by the flying loads. The initial tension of these cables has the further advantage of relieving the wings of the landing forces. In none of the landings made so far has any slackening of the cables been noticed.

Tail Surfaces. The tail surfaces consist of a vertical fin with balanced rudder, and of a tail plane with balanced elevator. The tail plane is built up around a box girder in the manner of the wings, while the vertical fin is internally braced by three lattice ribs. The structure as well as the plating is of sheet duralumin.

Specifications of the Zeppelin-Staaken E.A.250

Span, 102 ft. 4 in.
Length overall, 60 ft.
Height, 17 ft.
Wing area, 1140 sq. ft.
Engines, four 260 hp. Maybach.
Weight empty, 12,360 lb.
Useful load, 5,340 lb.
Weight loaded, 18,700 lb.
Wing loading, 16.4 lb./sq. ft.
Power loading, 18 lb./hp.
Carrying efficiency, 28 per cent.
Maximum speed, 130 m.p.h.
Landing speed, 80 m.p.h.
Fuel supply, 6 hr.
Pay load, 12 passengers.

"Who's Who in American Aeronautics"

(Copyright, 1921, by The Gardner, Moffat Co., Inc.)

Every week, AVIATION AND AIRCRAFT JOURNAL prints the biographical sketch of men who are prominent in American Aeronautics. These sketches will be published later in pamphlet form. As so many of the officers change their stations often, it is believed that a semi-annual issue will be necessary. In compilations of this character many errors and omissions occur. It will be appreciated of corrections are sent to "Who's Who" Editor.

Percival Bradford Crocker

CROCKER, PERCIVAL BRADFORD, Mechanical Engineer; born, Foxboro, Mass., March 1, 1895; son of Willard Crofts Crocker and Annie W. (Crofts) Crocker; married, Gertrude Bristol, June 16, 1921.

Educated: Public schools; Foxboro High School; Allen School for boys; B.S. 1921, University of Maine.

Aeronautical Activities: M. I. T. Ground School; and and 3rd A. I. C., A. E. F.

Flying Rating: Reserve Military Aviator.

Member: Massachusetts Aero Club.

Present Occupation: Mechanical Engineer.

Address: Foxboro, Mass.

Hugh Chester Downey

DOWNEY, HUGH CHESTER, 1st Lieut., Air Service; born, Dobbs Ferry, N. Y., Oct. 4, 1894; son of Fred W. Downey and Annie (Gavin) Downey.

Educated: Public and high schools; Engineering School, New York University.

Professional: Has been with Gallaudet Aircraft Corp., Aeromarine Plane and Motor Co., Curtiss Engineering Corp., and Suffolk Aircraft Co.

Flying Rating: Reserve Military Aviator, Aug. 1918; Airplane Pilot, Feb. 1921.

Member: Aero Club of America; Langley Field Officer's Club.

Present Occupation: 1st Lieut., Air Service.

Address: Langley Field, Va.; home, in care of M. Downey, Dobbs Ferry, N. Y.

Norman Jay Boots

BOOTS, NORMAN JAY, Captain, Air Service; born, New Brighton, Pa., Oct. 11, 1892; son of John S. Boots and Elizabeth (McPherson) Boots.

Educated: New Brighton High School; 1915, U. S. Military Academy.

Professional: One year, 10th U. S. Cavalry; Punitive Expedition in Mexico and Aviation Service; U. S. Army, 1916 to date.

Aeronautical Activities: Training, San Diego, 1916-1917; Commanding Officer, 33rd, 19th, and 47th Aero Squadrons; Officer in Charge of Aerial Gunnery, Selfridge Field, 1918-1919; Commanding Officer, Selfridge Field, 1919-1920.

Flying Rating: Junior Military Aviator, May 1917; Aerial Observer; Airplane Pilot.

Member: Aero Club of America; Detroit Athletic Club; University of Michigan.

Present Occupation: Captain, Air Service.

Address: McCook Field, Dayton, Ohio; home, New Brighton, Pa.

Cornelius J. Kenney

KENNEY, CORNELIUS J., 1st Lieut., Air Service; born, Brookline, Mass., Nov. 12, 1897; son of Michael Kenney and Julia Kenney.

Educated: Mechanic Arts High School; Northeastern Engineering School.

Aeronautical Activities: Cadet, Dec. 1917 to June 1918; 2nd Lieut., June 1918 to Sept. 1920; 1st Lieut., Sept. 1920 to July 1921.

Flying Rating: Airplane Pilot.

War Service: Army, Dec. 1917 to Nov. 1918.

Present Occupation: 1st Lieut., Air Service.

Address: Kelly Field, Tex.

Leland S. Andrews

ANDREWS, LELAND S., 1st Lieut., Air Service; born, Napoleon, Mich., Sept. 3, 1893; son of Fred M. Andrews and Mana S. Andrews.

Educated: Napoleon High School; Commercial Department, Ferris Institute, Aug. 1912.

Professional: Bookkeeper, Sept. 1912 to Dec. 1914; automobile salesman, 1915 to 1916.

Aeronautical Activities: Training, Jan. 1918 to May 1918; Pursuit Combat and Aerial Gunnery Instructor June 1918 to July 1919; Pilot on Mexican Border Patrol, Aug. 1919 to March 1921; Engineer Officer and Test Pilot, Provisional Air Park Group, Kelly Field, March 1921 to May 1921.

Flying Rating: Reserve Military Aviator, May 3, 1918.

War Service: July 1917 to date.

Present Occupation: 1st Lieut., Air Service.

Address: Napoleon, Mich.

Morris M. Titterington

TITTERINGTON, MORRIS M., Aeronautical Engineering; born, Paris, Tex., July 20, 1891; son of George A. Titterington and Lena (Morris) Titterington; married, Pearl Bettis, June 4, 1918.

Educated: Dallas High School, Tex.; Bliss Electric School; University of Dallas.

Professional: With Curtiss Co. Hammondsport, N. Y., 1913-1914; Sperry Gyroscope Co., 1914-1920; Pioneer Instrument Co., 1920 to date.

Aeronautical Activities: Built and flew own plane, 1912; took flying course at Curtiss School, 1914; in charge of aeronautical instrument work of the Sperry Gyroscope Co. in France and England, 1915-1917; carried out experimental work on instruments for Navy, 1917 until Armistice.

War Service: Civilian in charge of experimental work for Navy, 1917-1918.

Member: A. S. M. E.

Present Occupation: Chief Engineer, Pioneer Instrument Co.

Address: 136 Havemeyer St.; home, 61 Poplar St., Brooklyn, N. Y.

Frank Waker Caldwell

CALDWELL, FRANK WAKER, Aeronautical Engineer; born, Lookout Mt., Tenn., Dec, 20, 1889; son of Frank Hollis Caldwell and Mary Ella Caldwell; married, Gertrude S. Heisel, Sept. 28, 1918.

Educated: Lookout Mt. High School; Tome School; 1907-1908, University of Virginia; B.S. in M. E., Mass. Inst. of Tech.

Professional: Process Engineer, The Cahill Iron Works, Chattanooga, Tenn., 1912-1916; worked out improvements in the manufacture of porcelain enameled ware.

Aeronautical Activities: Foreman, Propeller Department, Curtiss Aeroplane Co., Buffalo, N. Y., 1916-1917; in charge of all propeller work for U. S. Air Service, 1917-1921; construction of propellers for Curtiss Co. and on Mexican Border; construction of two propeller testing laboratories and supervision of their operation; design of most of the propellers used by the Air Service and many of those used by the Navy during the war.

Member: S. A. E.; Engineer's Club of Dayton.

Present Occupation: Aeronautical Engineer.

Address: McCook Field; home, 835 N. Euclid Ave., Dayton, Ohio.

Walter R. Lawson

LAWSON, WALTER R., Captain, Air Service; born, Glenn Allis, Ga., Oct. 25, 1893; son of Frank H. Lawson and Mary Ellen (Ralls) Lawson; married, May Elaine Rogers, Sept. 11, 1913.

Educated: High school, Osceola County, Fla.

Professional: Automobile business, 1910 to 1916.

Flying Rating: Aerial Observer, France, Jan. 12 to Oct. 22, 1918; Airplane Pilot, March 1919 to date.

War Service: On Mexican Border and in France, June 1916 to Jan. 1918.

War Honors: Distinguished Service Cross, Oct. 1918, citation by Commanding General, A.E.F.

Member: Aero Club of America.

Present Occupation: Captain, Air Service.

Address: Langley Field, Va.

Ennis Clement Whitehead

WHITEHEAD, ENNIS CLEMENT, 1st Lieut., Air Service; born, Westphalia, Kans., Sept. 3, 1895; son of J. E. Whitehead and Celia Whitehead; married, Mary Morse Nicholson, Sept. 25, 1920.

Educated: Public and high schools; A.B. 1920, University of Kansas.

Aeronautical Activities: Training at various camps in U. S. and France; Test Pilot, 3rd A.I.C., May 1918 to Nov. 1918.

Flying Rating: Reserve Military Aviator, Oct. 1917; Airplane Pilot, Jan. 1921.

War Service: Air Service, May 1917 to Jan. 1919.

Present Occupation: 1st Lieut., Air Service.

Address: Langley Field, Va.; home, Westphalia, Kans.

Frederick A. Johnson

JOHNSON, FREDERICK A., 1st Lieut., Air Service; born, Jolna, N. D., April 25, 1896; son of Chas. A. Johnson and Jane (Troxel) Johnson.

Educated: High school and college.

Flying Rating: Reserve Military Aviator; Airplane Pilot.

Member: Aero Club of America.

Present Occupation: 1st Lieut., Air Service.

Address: Payette, Idaho.

Robin A. Day

DAY, ROBIN A., 1st Lieut., Air Service; born, Dec. 5, 1890; son of Geo. T. Day and Williamette Day; married, Harriette M. Falconer, Dec. 2, 1917.

Educated: Bismarck High School; Highland Park College.

Professional: Salesman.

Flying Rating: Airplane Pilot, March 1919.

War Service: Air Service and Infantry since Aug. 1917.

Present Occupation: 1st Lieut., Air Service.

Address: 202 Avenue E, Bismarck, N. D.

Dale Vincent Gaffney

GAFFNEY, DALE VINCENT, 1st Lieut., Air Service; born, Methuen, Mass., Feb. 18, 1894; son of John D. Gaffney and Edith H. Gaffney; married, Grace Maude Blanchard.

Educated: Public and high schools.

Aeronautical Activities: Primary training, April 1918 to June 1918; advanced training, July 1918 to June 1919; border duty, Mexican Border, July 1919 to May 1921.

Flying Rating: Reserve Military Aviator; Airplane Pilot, July 1918.

Present Occupation: 1st Lieut., Air Service.

Address: Ft. Bliss, Tex.

Robert Kenneth Perry

PERRY, ROBERT KENNETH, Student; born, Bound Brook, N. J., Sept. 1, 1899; son of David M. Perry and Sara Mae (Dunning) Perry.

Educated: Bound Brook public schools; Bordentown Military Institute; Williams College.

Aeronautical Activities: Ground School at Princeton and Austin, Tex.; Flying School at March Field, Riverside, Calif.; Secretary of the Intercollegiate Flying Association;

Flying Rating: Reserve Military Aviator.

Member: Williams Club, New York, N. Y.

Present Occupation: Student.

Address: 3 Maiden Lane, New York, N. Y.; home, River Road, Bound Brook, N. J.

Howard L. Montgomery

MONTGOMERY, HOWARD L., Lawyer; born, Fort Edward, N. Y., Oct. 3, 1890; son of Lewis Montgomery and Elizabeth (Early) Montgomery.

Educated: Fort Edward High School; L. L. B. 1911, Yale University.

Professional: Lawyer, writer, and speaker.

Aeronautical Activities: Attended S. M. A. at Cornell University; Trained in France.

Flying Rating: Reserve Military Aviator.

War Service: U. S. Army Air Service, June 1917 to Feb. 1919.

Present Occupation: Lawyer.

Address: 122 Glen St., Glens Falls, N. Y.; home, 217 Broadway, Fort Edward, N. Y.

Alfred W. Barrett Jr.

BARRETT, ALFRED W., JR., Automobile Business; born, Dedham, Mass., Sept. 6, 1897; son of Alfred Barrett, Sr. and Frances (Lalor) Barrett; married, Margaret Flanagan, March 28, 1919.

Educated: Grammar and high school.

Professional: Motorcycle business; Automobile School business.

Aeronautical Activities: Two years with Curtiss; field manager for James McGrath.

Present Occupation: Inspector.

Address: 4810 Chestnut St., Philadelphia, Pa.

American Legion Flying Meet, Kansas City.

In conjunction with the Third Annual American Legion Convention in Kansas City on the three days, October 31 to Nov. 2, next, preparations have been made to hold a flying meet to help entertain the crowd of visitors that are to be present, and to demonstrate the progress in aviation since the War. It is to the interest of all those connected with flying that this opportunity to educate such a widely representative body of men on the practicability of modern aviation and its requirements should be utilized to its fullest extent.

The American Legion Convention Committee, the Chamber of Commerce of Kansas City and the Kansas City Flying Club, are cooperating closely in the promotion of this meet. All details of preparation are in the hands of men who are thoroughly experienced. The ninety acre field is in charge of the man who laid out Mineola Field, Long Island. Oil and fuel will be furnished free to contestants; full facilities will be available for the repair of wings and motors; accommodations will be ready for pilots and machines.

Following is the proposed program of the meet, for which the sanction of the Aero Club of America has been obtained:

Event No. 1

(a) Altitude Test. World's Record. Single Seater. Large cup to machine reaching highest altitude.

(b) Altitude Test. World's Record. Two Seaters. Large cup to machine reaching highest altitude.

(c) Parachute Altitude Test. For men. World's Record. Large cup to jumper from highest altitude.

(d) Parachute Altitude Test. For women. World's Record. Large cup to jumper from highest altitude.

Event No. 2

Formation flying by army and civilian planes.

Event No. 3

Parachute drop from captive balloon by a woman.

Event No. 4

Stunting contest, three best to be picked for finals to be held on following day. Absolutely no stunting to be done under an altitude of 1,000 ft. Large silver cup for first and second prizes.

Event No. 5

Exhibition of sport model planes. Planes take off singly, each ship to be in air seven minutes. They may perform any stunts they care to above 1000 ft., with a view to showing the quickness of climb, stunting, straight away speed flying, and in landing in the smallest distance possible. Prize—large silver cup.

Event No. 6

Relay Race. Entries open only to JN4D's and Cannucks. 4 ships to a team. Entry List limited to 5 teams. Standing start once around a fifteen mile triangular course, 5 miles between points, landing back on the field, taxi to the line of start whereupon the second ship takes off. Prizes to the winning team—$250.00 to each pilot in cash. Total $1,000.00

Event No. 7

Legion Junior Derby. Open to JN4D and Cannuck type ships only. Five times around a triangular course of fifteen miles. (75) miles. Rules—the ship must have a regulation OX motor. It can be streamlined, or use any other device known to increase its speed. Prizes—a large cup value $1,000.00 to be awarded by the President of the United States in addition to which cash prizes.

Event No. 8

Exhibition of plane changing, wing walking standing on top wing of plane while plane loops, and parachute drops from captive balloon and planes from an altitude of 2000 ft.

Event No. 9

Looping contest for worlds record. No loops under 1,000 ft. Large Silver Cup to winner.

Event No. 10

For passenger carrying ships of five passenger or more. This is to cover freight, express and mail planes. To be judged on all around efficiency. Large cup for the winner.

Event No. 11

Legion Derby. Open to any make of airplane, horsepower or wingspread. Machines to start at scratch, race over a straight line course ten miles between pylons, fifteen laps, (150 miles). Prize—one leg on a cup costing $2,500.00 which has to be won twice to become the permanent property of the winner. Another beautiful cup—value $1,000.00 which will be awarded the winner as his permanent property by the President of the United States together with cash prizes of $2,500.00 for the first, $1,000.00 for second, $500.00 for third, $200.00 for fourth and $100.00 for fifth place.

Event No. 12

Long distance endurance race over a minimum distance of 600 miles. The winner is to receive a trophy and a cash prize of $1,000, and the contestant finishing second a cash prize of $500.

Aviation Day, Mineola, Oct 16.

The Contest Committee of the Aero Club of America announces that an Aviation Day will take place on the Curtiss Field at Mineola on Sunday, Oct. 16, through the courtesy and cooperation of the Curtiss Co. in loaning the field.

Following is the program of the Aviation Day:

1. Aero show which will last all day. Each exhibitor will have his exhibit on the field in front of a hangar, all of which are numbered and on which he may display a sign. The location of each exhibit will be found in the program, which it is hoped can be given gratis to all paying admission to the field. Should exhibitors wish to insert page advertisements, they may do so for the cost of the printing and paper. By having the exhibits on the field instead of in the buildings the public may examine them at their leisure without being afraid of missing any of the flying.

2. Demonstration flights of airplanes. Each exhibitor is requested to make one or more exhibition flights to show the performance of his machine, engine, etc. The nature and duration of each flight should be sent in writing to the Contest Committee of the Aero Club, who will assign a time for each flight and publish it in the program together with the name of machine, engine, pilot, and purpose of the flight. In this way anyone interested in a machine will know at what time it will fly, and the public will know at all times what machines are in the air.

3. Trophy for best completed demonstration of aerial transportation from or to New York by airplanes or seaplanes within 8 hrs., starting at 9 a. m. and finishing at 5 p. m. The New York terminus must be the Curtiss Field for airplanes, and Port Washington for seaplanes. Contestants shall notify the Contest Committee of their intention to enter, and give name of airplane, motor and pilot. The exact nature of each contestants contemplated trip should be sent in a sealed envelope, which will not be opened until after the entries have closed at noon Oct. 10. This will insure entrants against having their ideas stolen or copied, but will give time to have the proposed trips printed in the program and newspapers. Each contestant should explain fully the advantages of his proposed trip over the other means of transportation, measuring it in time, dollars and cents, or any other way, to assist the judges in awarding the trophy. The judges shall be the Aviation Editors of the New York papers, and the trophy shall be awarded on points as follows: Each editor shall publish in his papers his choice for the first five places, and in each published list the Contest Committee will award 5 points for first place, 4 points for second place, 3 points for third place, 2 points for fourth place, and 1 point for fifth place. The contestant receiving the greatest number of points shall be awarded the trophy. However no contestant shall be eligible for the trophy unless the proposed flight is actually completed.

A New Armored Airplane

A twin-engined armored airplane, designed to protect the pilot and gunners, has recently been designed by Lioré and Oliver, a French firm. The purpose of the constructors was to supply the need for an airplane properly armored and at the same time light and maneuverable. The power plant of this new plane are two 9-cylinder 180 hp. Le Rhone engines, mounted in a streamline nacelle on each side of the central fuselage, which is constructed entirely of duralumin and is calculated to withstand six times the normal load. A series of tubes forming warren trusses is riveted to the longerons of the fuselage.

The pilot and the gunner who are in one compartment are protected by steel plates 0.276 in. in thickness, riveted together. The weight of the armor alone is 661 lb. The gunner can either remain in his gun ring or seat himself behind the pilot and take control of the machine. To facilitate this, the gun ring is mounted on slides and can be moved backward.

The engines are supplied from a main tank having a capacity of 72 gal., mounted in the nose of the fuselage, and by two gravity tanks in the top wing. All tanks are leak-proof. There is a pump for each of the gravity tanks, and by turning a tap in the pilot's cockpit one pump can be used for supplying both tanks if the other pump is damaged. Should both pumps be put out of action, the gravity tanks contain enough fuel for half an hour's flight. Each engine is held in place by duralumin tubes attached to the interplane struts and the landing gear.

The plane has a speed at ground level of 114 m.p.h., and at 9,840 ft., 108 m.p.h., with a ceiling of from 18,000 to 19,000 ft. The length of the machine is 27.2 ft., span 47.1 ft., height 11ft. and wing area 509 sq. ft. It can carry a useful load of 1,322 lb.

With only one engine running, the machine has made a series of figure eight turns without losing altitude. In this test the full load of 1322 lb. was carried, and a horizontal speed of 62 m.p.h. was made.

Foreign Aeronautical News

England

As a result of examinations for the entry of boy mechanics into the Royal Air Force held during the first six months of 1921, approximately 500 boys will be taken into the Force. The successful candidates will be allocated for training in various skilled trades in approximately the following proportions: Carpenters, 150; Coppersmiths, 30; Draughtsmen, 10; Fitters. 300; Pattern Makers, 10. Boys accepted for service Fitters, 300; Pattern Makers, 10. Boys accepted for service will be taken both from those who have been nominated by the Local Education Authorities for examination, and those who took the open competitive examinations held by the Civil Service Commissioners. In assigning boys to the various trades, endeavor is made to give effect to each boy's individual preference.

Switzerland

The report of the work of the Swiss Air Force during the year 1920 shows that 12,380 flights were made for a total duration of 3,532 hours. In this number of flights only 8 accidents occurred. No one was injured in these accidents, but there were two deaths as the result of crashes during non-service flights. In the training of airmen in Switzerland, which included an average of 10 hours flying per month, special stress was laid to the development of safety in flying.

Japan

Japanese aviation authorities, it is announced, are making preparations for the establishment of an aerial port near Tokyo. This port is intended to be the first of many airdromes to be constructed in Japan, Korea, Saghalien, etc. It is to comprise a training ground, landing place, warehouses, customs house, hospital, wireless installations, a signal tower, etc., also equipment for night flying. The fact that this air port will be placed under the control of the Imperial Japanese Aviation Bureau will serve to make it an important military asset in time of war.

Where to Fly

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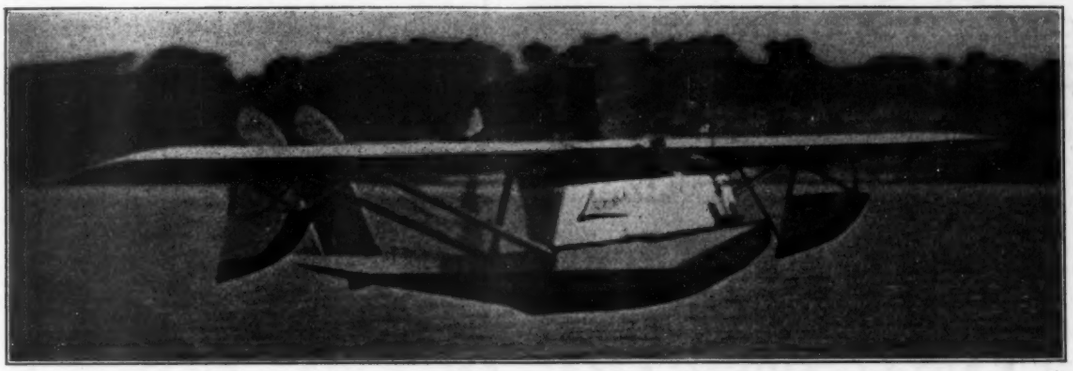

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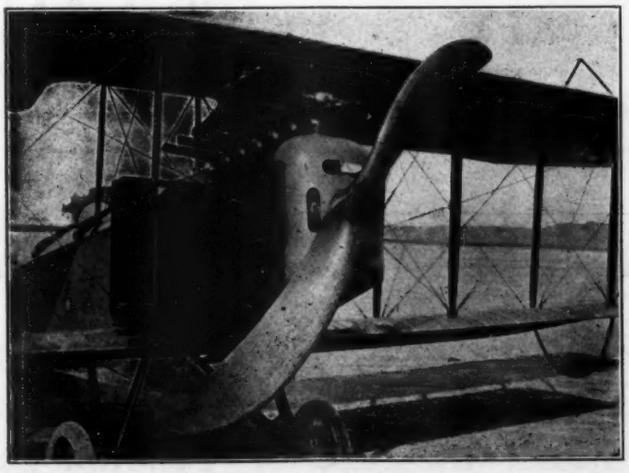

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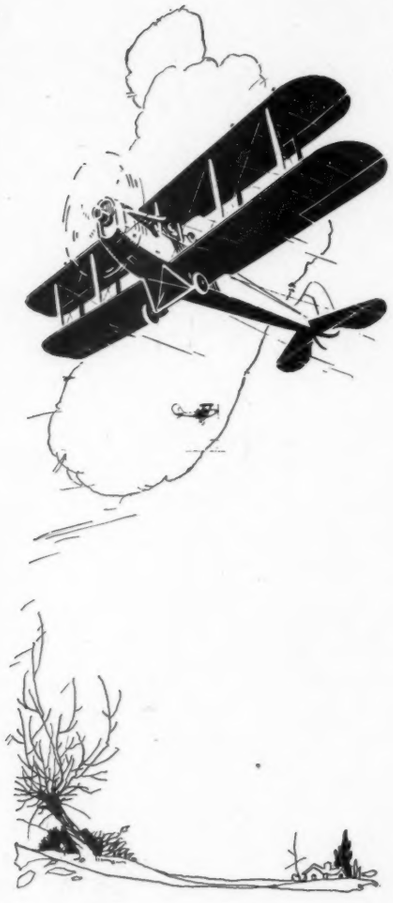

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